USDA NRCS
United States Department of Agriculture
Natural Resources Conservation Service

Plant Guide

NORTHERN PIN OAK

Quercus ellipsoidalis E.J. Hill

Plant Symbol = QUEL

Contributed by: USDA NRCS National Plant Data Center & the Biota of North America Program

Baileys Nurseries, Inc.

Alternate Names
Hill's oak, jack oak, upland pin oak

Uses
The heavy wood of northern pin oak is used for furniture, flooring, and interior finishing as well as for posts, railroad ties, shingles, fuel, and some hardwood pulp.

Northern pin oak acorns are eaten by a variety of wildlife species including gray squirrels, white-tailed deer, and blue jays. Trunk cavities are utilized as nesting sites by wood ducks, eastern kingbirds, and the federally endangered Kirtland's warbler.

Northern pin oak is useful for rehabilitating disturbed sites. It has a deep root system and successfully maintains growth even on nutrient-poor soils and during drought. It is rarely planted in landscapes but has long-persistent leaves with outstanding fall color (orange and red to reddish brown) and should be considered for dry sites.

Status
Please consult the PLANTS Web site and your State Department of Natural Resources for this plant's current status such as state noxious status and wetland indicator values.

Description
General: Beech Family (Fagaceae). Native trees growing to 21 m tall, with an irregularly rounded crown and low-hanging lower branches that persist as dead stubs, giving a ragged appearance to the trunk; bark dark gray, smoothish, furrowed into narrow ridges on lower trunk and older branches. Leaves alternate, elliptic-obovate to elliptic-oblong, 8–12(–17) cm long, 6-15 cm wide, with 5–7 bristle-tipped lobes broadest toward the tip, the sinuses rounded or elliptic and thumb-shaped, cut nearly 3/4 to the midvein, bright green above, with tufts of hairs in vein axils below, commonly turning red in fall. Male and female flowers are borne in separate catkins on the same tree (the species monoecious); staminate flowers develop from leaf buds of axils of the previous year, the pistillate flowers from buds formed during the current year. Acorns maturing in the second year, elliptic to broadly ovate, 1.2–2 cm long, the finely hairy cup enclosing 1/3–1/2 of the acorn and tapering to a stalk-like base. The common name from the close similarity to pin oak (*Q. coccinea*), but with a more northern distribution. Use of 'Hill's oak' as the common name avoids confusion with 'pin oak' (*Q. coccinea*), which is closely similar.

Northern pin oak is in the red oak subgroup (subgenus *Erythrobalanus*) and hybridizes with *Q. rubra* (northern red oak) and *Q. velutina* (black oak).

Northern pin oak is distinguished from pin oak by its more tapering and elongated acorns and its preference for drier habitats. The leaves are shed in the autumn, whereas those of pin oak persist into the winter.

Variation within the species: There are no recognized varieties.

Distribution
Northern pin oak is distributed primarily in the middle and western parts of the Great Lakes region -- from central Michigan east to noth-central Wisconsin, eastern Iowa, northern Illinois, and northern Indiana. Disjunct populations occur in northern Ohio, Arkansas, and extreme southeastern North Dakota. For current distribution, please consult the Plant Profile page for this species on the PLANTS Web site.

Adaptation
Northern pin oak is an upland species that commonly grows on dry, acid, sandy soils with a thin organic layer. It most often occurs on sandy plains and sandstone hills, and develops into pure populations only on such sites (an edaphic climax). It is the most droughts tolerant of all black oaks. It occasionally grows on moderately mesic slopes or uplands in varying mixtures with white oak (*Q. alba*), black oak (*Q. velutina*), scarlet oak (*Q. coccinea*), bur oak (*Q. macrocarpa*), and northern red oak (*Q. borealis*).

Flowering happens from March through May and fruiting from late August to early December.

Establishment
Seed production begins at about 20 years of age. Good seed crops are produced every 2–3 years. Predation by weevils may greatly reduce reproduction potential even in mast years. Northern pin oak reproduces vegetatively by sprouting from the root collar or stump if top-killed or cut.

Management
The thick bark of mature trees (greater than 25 cm d.b.h.) minimizes fire damage. Smaller trees are easily damaged by surface fires but commonly sprout vigorously from the root collar or stump after top-kill. Repeated annual burns kill smaller diameter stems. Leaves of Northern pin oak may become chlorotic in high pH soils.

Northern pin oak is not easily transplanted because of the rapid development of a deep taproot. Nor is it widely available in the nursery trade. Seeds germinate after dormancy is broken by stratification for 30-45 days at 1-5° C.

Oak wilt
Northern pin oak is susceptible to oak wilt infection, a fungal disease that invades the water-conducting vessels and plugs them. As water movement is slowed, the leaves wilt and rapidly drop off the tree. The disease begins with a crinkling and paling of the leaves, followed by wilting and browning from the margins inward. Necrosis may be strongest along the veins or between them. The symptoms move down branches toward the center of the tree and the tree may die within 1–3 months, although some diseased trees may survive up to a year. The disease may be spread by insects (primarily beetles) or pruning tools, but most of the tree loss in oak wilt centers results from transmission through root spread between adjoining trees. A trench (dug and then immediately filled) between neighboring trees severs the roots and prevents fungus spread. Dead and infected trees must be destroyed – once a tree has become infected, there is little chance to save it. The wood may be used for firewood provided it is debarked or covered and sealed during the spring and summer (Johnson and Appel 2000; Roberts 2000; Wisconsin Dept. of Natural Resources 2000; City of Austin 2000).

This disease most seriously infects species of the red oak group (including black and live oaks). Overcup oak, bur oak, white oak, and other members of the white oak group are not as susceptible and can be planted in oak wilt centers. Oak wilt has reached epidemic proportions in Texas and in the mid-West from Iowa and Minnesota through Michigan and Wisconsin into Ohio, West Virginia, and Pennsylvania.

Cultivars, Improved and Selected Materials (and area of origin)
Contact your local Natural Resources Conservation Service (formerly Soil Conservation Service) office for more information. Look in the phone book under ”United States Government.” The Natural Resources Conservation Service will be listed under the subheading “Department of Agriculture.”

References
Coladonato, M. 1993. *Quercus ellipsoidalis*. IN: W.C. Fischer (compiler). *The fire effects information system* [Database]. USDA, Forest Service, Intermountain Research Station, Intermountain Fire Sciences Laboratory. Missoula, Montana.

City of Austin 2000. *The oak wilt suppression program*. Austin Parks and Recreation, Austin, Texas. SEP00. <http://www.ci.austin.tx.us/oakwilt/>

Johnson, J. & D. Appel 2000. Eight step program to oak wilt management. Department of Plant Pathology & Microbiology, Texas A&M University, College Station, Texas. <http://cygnus.tamu.edu/Texlab/oakwilt.html> Accessed September 2000.

Nixon, K.C. et al. 1993. *Quercus*. Pp. 445-506, IN: *Flora of North America, North of Mexico. Vol. 3*. Oxford Univ. Press, New York, New York. SEP00. <http://hua.huh.harvard.edu/cgi-bin/Flora/flora.pl?FLORA_ID=12395>

Roberts, D.L. 2000. *Oak wilt: A threat to red oaks*. Michigan State University Extension Website. SEP00. <http://www.msue.msu.edu/reg_se/oakwilt/>

Samuel Roberts Nobel Foundation 1999. *Noble foundation plant image gallery*. Ardmore, Oklahoma. 29nov2000. <http://www.noble.org/imagegallery/index.html>

Wisconsin Dept. of Natural Resources 2000. *Oak wilt in Wisconsin: Biology and management*. Wisconsin DNR Website. SEP00. <http://www.dnr.state.wi.us/org/land/forestry/fh/diseases/oakwilt.htm>

Prepared By
Guy Nesom
Formerly BONAP, North Carolina Botanical Garden, University of North Carolina, Chapel Hill, North Carolina

Species Coordinator
Gerald Guala
USDA, NRCS, National Plant Data Center, Baton Rouge, Louisiana

Edited: 13nov00 jsp; 13feb03 ahv; 060809 jsp